

HISTORY OF THE DEPARTMENT OF GEOLOGY
AT THE OHIO STATE UNIVERSITY

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Part 1 - 1873-1945

by

Edmund M. Spieker

The story of geology at Ohio State begins in distinguished terms with the very foundation of the University. Edward Orton, the beloved first president of the University and its first professor of geology, was one of America's most eminent geologists.

Dr. Orton was a native of upstate New York (born March 9, 1829) and was educated at Hamilton College and Harvard. He entered the ministry but soon was more the "natural philosopher" than the clergyman, and he held the chair of Natural Science at Albany State Normal School in 1856. From 1859 to 1865 he was principal of the preparatory academy at Chester, N. Y., but in 1865 he was called to Antioch College as professor of Natural Science and so began his long career in Ohio. In 1869 he became State Geologist, and in 1872 President of Antioch. In the following year, however, he was called to the Presidency of the new Agricultural and Mechanical College at Columbus. This office he held until 1881, when the trustees accepted his resignation, but he continued as Professor of Geology until his death in 1899. In 1897, Edward Orton was elected president of the Geological Society of America, and in the last year of his life, 1898-99, to the highest position awarded to an American scientist, the presidency of the American Association for the Advancement of Science. No other scientist in the history of Ohio State's faculty can claim such a record.

On September 17, 1873 the new college opened its doors, with a faculty of seven members and fifty students. The first curriculum embodied required basic subjects in the first two years, then for the upperclass years, three schools: 1- Exact Sciences; 2- Natural History; and 3- Letters. Geology, seated in the school of natural history, was covered in the following curriculum.

First year:

First term: Physiographic and Lithological Geology.

Second term: Dynamical Geology, Historical Geology, including
The Elements of Paleontology.

Third term: Historical Geology completed.

Second year:

First term: Economical Geology, Building-stones,
Limestones, Cements, Ores, etc.

Second term: Economical Geology continued, Coal,
Petroleum, Salt, etc.

Third term: Relations of Geology to Agriculture.

Textbooks and works of reference: Dana's "Manual of Geology", Lyell's

"Students' Elements of Geology", Lyell's "Principles of Geology" (11th Edition), Vogt's "Lehrbuch der Geologie", Nicholson's Manual of Paleontology, and Geological Reports of Ohio and of other States and Territories.

So the study of geology at the new college got off to a very good start, with an effectively planned curriculum and a first-rate teacher. Edward Orton was long and widely remembered for his kindliness, patience, and wisdom, as well as for the eloquence and clarity of his lectures; and above all he was a most lovable person.

In 1874 the Legislature passed an act ordaining that all collections of the State Geological Survey be put in possession of the new college. This large collection of rocks, minerals, and fossils was a most important and valued benison, but for several years it was the source of much anguish to Dr. Orton. In his report for 1874 he wrote, "but to display them properly will require a considerable further outlay in the way of wall and table cases. I trust that this subject may receive as early attention from the Board as the state of finances will permit." Whether it was the state of finances or other condition, nothing happened, and every year thereafter Dr. Orton noted gratifying increases in the collection as he renewed, ever more plaintively, his plea for adequate facilities. We may as well note at once that the cases so badly deserved and needed were not obtained until 1881.

As originally organized, the Department included the subjects of mining and metallurgy, but within the first three years it became apparent that the engineering phases of the subject demanded more than Dr. Orton was prepared to provide, and in 1876 a proposal for a separate department of Mining Engineering went to the Legislature. In the following year John A. Church was appointed Professor of Mining and Metallurgy.

Through these years the curriculum in geology remained about the same. In the second term of the first year the subject became (in 1877) the geology of Ohio, and the third term of the second year was now devoted to the relations of geology to soils and water supply. Jukes's "Manual of Geology" and Bischof's "Chemical Geology" had been added to the list of texts.

In the records for 1877-1878 we find the first enrollment figures: first-year geology, 15 students; second-year geology, 3; physical geography, 58. In the following year the first-year students were 17, the second-year 7, and a course in elementary paleontology boasted 31 students. The total in geology was 105; out of the University's total enrollment of between 150 and 250 students, this was by no means a bad showing.

By the academic year of 1878-79 the course in paleontology offered in the second year as an optional alternative ran through all three terms, covering the range from the lower Silurian to the Coal Measures.

In 1881 Edward Orton's resignation as President, originally tendered on June 20, 1878 but annually refused by the trustees, was finally accepted, and he assumed senior position on the faculty as Professor of Geology. We can appreciate his desire to be relieved of administrative work when we realize that in addition to his duties as President he taught not only the courses in geology but also, by 1879, general history and history of the United States; in addition, he had to take care of the geological collections. In the very first year of his freedom from administrative duty, 1881-82, we find Dr. Orton teaching four classes in Latin and history in addition to the geology -- but as the duties of curator pressed upon him he besought President W. Q. Scott for relief. Now that adequate cases have been provided, he said, a curator is desperately needed; but, there being no money to pay for one, he had to do the work himself.

In the fall of 1882 Dr. Orton took leave of absence to reestablish the Ohio Geological Survey, and in his absence Professor Nathaniel Lord of Mining Engineering took his place. For the year 1882-83 Dr. Orton noted that he had employed on the Geological Survey "half a dozen or more of our young men....competent and reliable field geologists." He also pleaded again for better care of the museum, which was now housed in University Hall "directly over the lecture room." The museum, he said, "is the most attractive room in the University to the majority of those who are shown through the buildings." Then, for the first time, he emphasized the need for a fireproof building to house the geological collection and the library.

In 1884 the University granted the E.M. degree to a man who was in more than one respect to play an important role in the work of the Department of Geology -- Edward Orton, Jr., devoted son, the founder of education in ceramic engineering in America, and the benefactor of Ohio State's geological library.

In 1890, plans for a new building were finally authorized. The museum collection now numbered over 7,000 entries properly catalogued, and many more thousands of actual specimens. George P. Grimsley, who graduated in 1890, was appointed curator. The proposed building was to be constructed of Ohio stone, which quarrymen in the state would surely be glad to contribute out of pride in having their products in "so conspicuous a building as this would be." In 1891 construction of the building was authorized, to cost \$80,834. The stone was to be "arranged as far as practicable to represent the geology of the state." J. W. Yost was the architect.

At this time, 1890-91, there were 117 students in the department, with 30 in general geology and 69 in physical geography. The next year, Harvey A. Surface, B.Sc., was added to the faculty, and Orton Hall (then so named) was in process of construction. The geologic library was then situated on the third floor of University Hall, but was destined to be moved to Orton Hall. The museum now had over 8,000 catalogued items. The curriculum was about the same as in years just past, but with a few new textbooks -- Green's "Physical Geology", Geikie's textbook, Hunt's

"Chemical Geology", and Daubrée's "Géologie Experimentale". For the second term, in paleontology and historical geology, Zittel's "Paläontologie" was added.

Through 1892 the work on Orton Hall was reported as "not progressing satisfactorily" because the iron for the roof was not being delivered, but by November the iron began to arrive. The building was scheduled to be completed by April 1, 1893. The various stones of which it was to be built were all described in the annual report of the trustees.

For the academic year 1892-93 Miss Florence Bascomb, with a newly-won doctorate from the Johns Hopkins University, was appointed assistant in place of Mr. Surface, who had resigned. For three years Miss Bascomb gave valiant and brilliant support to Dr. Orton before going on to Bryn Mawr, where she became head of the Department of Geology and produced such distinguished female geologists as Eleanora Bliss Knopf and Anna Jonas Stose.

1893-94. Orton Hall is now completed, at a cost of \$102,000, or 20 percent more than the original estimate (inflation is nothing new). The main lecture room, with the "professor's private room," was to the right of the entrance, the University library to the left, and the museum in the south wing. The basement was given over to geographic modelling, with the museum of economic geology in the rear (where it was to stay for more than 40 years). On the second floor were a "petrographical laboratory" and a "paleontological laboratory or working room". Dr. Orton was very proud of the fine new fireproof building, as well he might have been, and as his remote successors are to this day.

Another tenant of the new Orton Hall was the Department of Ohio Archaeology, with W. K. Moorehead in charge. Dr. Moorehead brought to Orton his whole collection from the Smithsonian Institution. He was instrumental in bringing together from various institutions the bones of the mastodon that has been the museum's center-piece for so many years, and in having the skeleton installed.

By act of the legislature, April 20, 1894, a "Department of Clayworking and Ceramics" was authorized, and during the next academic year this department, the first of its kind in America and long preeminent in the field, was set up by its founder, Edward Orton, Jr. The "greater part of the basement of Orton Hall" was given over to the new ceramic school with its abundant and varied equipment, and a large room on the first floor served for lectures and exhibits.

For the year 1895-96 an important change came when Miss Bascomb left and John A. Bownocker, destined to head the Department through one of the critical periods of its growth, was elected to take her place. Through the early years of the Department's experience Dr. Orton deplored the one important weakness it sustained -- no effective work in the petrography of crystalline rocks. This was Miss Bascomb's

specialty and during her tenure here she put the work on firm basis, so that Mr. Bownocker, an Ohio State graduate of 1889 who had done graduate work at Chicago and Yale, inherited a going petrographic program. The texts used were Michel-Lévy, "Les Minéraux des Roches", Rosenbusch's "Mikroskopische Physiographie", Teall's "British Petrography", Spottiswoode's "Polarization of Light", and others not named in the reports of the Department. Nothing trivial about any of this.

For 1896-97 the courses were organized somewhat differently -- for example, the first course was now called "cosmical geology", but the content was about the same as for the old "lithological geology", etc. And here we see the term "economic geology" for the first time, with Phillips's "Ore Mining" as the text. A new course, "geographic geology", was introduced in 1897-98. This was evidently what we would call geomorphology, and apparently was centered on glacial geology.

In June of 1897 the University conferred upon John Bownocker the degree Doctor of Science. The next year (1898-99) Dr. Bownocker was promoted to Assistant Professor, and Charles Smith Prosser was appointed Associate Professor of Historical Geology for the following year. Prosser, a Cornell graduate, came to Ohio from Union College, where he was Professor of Geology.

By 1899 the University library had outgrown the available space in Orton Hall and the need for a separate library building was apparent. Especially was this clear when it was recognized that the library needed to grow faster if it was to match the potentialities of the University. In his last report, President Canfield set forth this need, and suggested as site for the building the center of the Oval!

In the Department of Geology the numbers of students coasted along at about the same level, even somewhat lower than the highest, with ten students in elementary geology, 36 in "cosmical", 5 in paleontology, 4 in petrography, 37 in physical geography, 1 in "geographic geology," and 22 in economic geology. The museum, however, was growing; its catalogue now held some 10,000 entries.

Late in 1899 the University and the Department suffered a really serious loss when Edward Orton died. Through the year he had suffered a few minor strokes so that he was frequently unable to meet classes or perform other duties. On the 16th of October there came the last "cerebral accident" that took him off. One is tempted indeed to write further here in encomium over this remarkable man, but suffice it to remark once and for all that he shaped the nature of the new University, resisting the manifold attempts from both within and without to impose narrow limits, and insisting on breadth and liberal education, the hallmarks of real universities. To put it bluntly, he prevented the institution from becoming a trade-school. He presided also over a Department of Geology in which it was a privilege to work and study.

Dr. Orton's work in the Department was absorbed by Prosser, who was appointed Chairman, and Bownocker, who was promoted to Associate

Professor and Curator of the Museum. In this year two courses were added to the curriculum: field geology and physiography (which was essentially geomorphology). Through the next four years there were few changes. In 1900-01 the curriculum was slightly enlarged to include advanced historical geology, and there were now 19 courses. In the following year course no. 20 was set up -- research work.

In 1904-05, Edward Orton, Jr. presented his father's private library to the University and the Department, and this was the nucleus of the collection later to be built up by Dr. Bownocker and endowed by Gen. Orton. The geologic library now held 653 volumes (in the general library), 635 separates, and some 400 miscellaneous pamphlets. Orton wanted a room set aside in Orton Hall specifically for the geology library. Plans were afoot to move the main library, and President Thompson, weighing the values involved, pointed out that the center of the oval would be a poor location because any building properly designed there would be hard to enlarge (and he was farsighted enough to see that any building they erected would have to be enlarged). He proposed the site of the Botany Building (now occupied by the Faculty Club) because a building there could be expanded indefinitely into Mirror Lake hollow. In the meantime, enrollments were increasing and Dr. Bownocker was now made full Professor of Inorganic Geology and Curator of the Geologic Museum.

1905-06: George D. Hubbard, a specialist in physiography and glacial geology, was appointed Assistant Professor. Mr. Prosser was away, studying at Cornell, and Clinton R. Stauffer, a graduate of 1903 who was to attain the Master's Degree in 1906, took his place.

During the year 1906-07 the Ceramic Department was removed from Orton Hall, to be housed in the engineering building across campus that became Lord Hall, and the space in Orton basement was given over to physiography. Mr. Stauffer left to take a fellowship at Chicago. Enrollment was increasing: general geology, 83, and physiography, 140. In 1907-08 two new courses were added, advanced physiography and the teaching of physiography, both taught by Professor Hubbard, the latter a response to the need for teachers of physical geography or physical geology in the high schools. In the following year there was no change in curriculum, but William Clifford Morse (O.S.U., A.B. 1906, M.A. 1908) was appointed Instructor.

In 1910 Dr. Hubbard went to Oberlin, and Thomas M. Hills (Wooster 1902, Chicago 1903-07, Berlin 1908) was called from Toledo University to take his place as Assistant Professor. Enrollment continued to increase and two new courses were introduced -- glacial geology, taught by Dr. Bownocker, and minor investigations and current literature, Mr. Hills. In 1911-12 Miss Clara G. Mark (O.S.U., B.A. 1900, M.A. 1910) was appointed Fellow in Geology, and in 1912-13 Mr. Charles R. Schroyer (B.A. 1912) was appointed Fellow.

The year 1913-14 brought important change, indeed. Mineralogy was taken out of the geologic curriculum and a separate department was set up, in the College of Engineering. This was a blow to the Department of Geology -- at least it was ruefully so regarded by Dr. Bownocker -- but it was done under the powerful hand of Edward Orton, Jr., Dean of the College of Engineering, who evidently thought mineralogy to be more important in, and closely associated with, metallurgy and ceramics. As a result of this misplacement the subject, fundamental in geology, has ever since been given the slant of the engineering departments concerned, and the ideas involved have become so deeply rooted that even in the recent realignment of courses in the newer structuring of the University, the staff in Mineralogy declined any change. The effect of the separation on the Department of Geology was considerably mitigated by the activity of Dr. William J. McCaughey, who had been teaching in the Department of Metallurgy and was put in charge of the new Department of Mineralogy. Dr. McCaughey was a dedicated and enthusiastic teacher whose original background was in geology, and he gave sympathetic attention to the geology majors who had to take his courses, but even this was not the same as having mineralogy in the geologic department itself.

The faculty for geology was increased in 1913 to six. Mr. Morse left to take an instructorship at Washington University (St. Louis), and two new members were appointed: Walter A. Ver Wiebe from Cornell, and Ray Russell Robinson from Ohio Wesleyan. In 1914 Robinson resigned and the staff stood at five members, but next year (1915-16) Kenneth Cottingham (O.S.U., B.A. 1913) was appointed Instructor. A course in the physiography of central Ohio was added to the Department's offerings. In 1916 Edward Orton, Jr. proposed to the trustees that the geologic library be formally named in honor of his distinguished father, The Edward Orton Memorial Library of Geology, and this was done.

On September 15, 1916 Dr. Prosser died, reportedly by his own hand, it is sad to note, and Dr. John A. Bownocker was appointed head of the Department. Dr. Bownocker was a man of no great brilliance, although everything he did was sound and reliable, but he was a shrewd judge of men and a devoted bibliophile, and the twelve years during which he led the Department saw on the one hand the first surge of growth in excellence of the faculty since the days of Edward Orton, and on the other the coming to light in all its plenary excellence of the Orton Memorial Library of Geology. These healthy developments will be clearly evident in the account to follow.

Dr. Prosser's place was taken by Joel Ernest Carman, who had taught in summer session on the campus. Dr. Carman was a product of the University of Chicago, where his specialty was the Pleistocene, but on coming to Columbus from the University of Cincinnati, where he had been Assistant Professor for some eight years, he took up work in Paleozoic stratigraphy and paleontology similar to that of Dr. Prosser and, indeed, gave most attention to the Devonian, which had been Prosser's specialty. Carman was appointed Assistant Professor in 1916, and in 1917 he advanced to full professorship. (For a while, beginning about this time and continuing to 1928, the University abolished the rank of Associate Professor.)

Enrollment was now beginning to increase at a rising rate. In physiography there were 387 students, in inorganic geology 26, historical geology 27, paleontology 4; general geology for students in agriculture, 244, for engineers, 70. A new course was established, in meteorology, taught by Dr. Bownocker, but it was not listed with the offerings in geology -- rather as a distinct department. In 1916-17 it had 41 students.

Although the impact of World War I on the nation's universities assumed serious proportions before the end of 1917, the Department of Geology at Ohio State suffered relatively little; enrollments dropped, and Dr. Carman was away at work in the Y.M.C.A., but otherwise there seems to be little evidence of disruption. Two new staff members were appointed. William M. Tucker (Ph.D. Indiana 1916) came from the University of Texas as Assistant Professor, and Helen Morningstar, an O.S.U. graduate (M.A. 1915) who gained her doctorate at Bryn Mawr as one of Miss Bascom's outstanding protegees, as Instructor. Miss Morningstar was a brilliant paleontologist and many of her admirers thought it was a tragedy when after marrying Raymond Lamborn she elected to drop scientific work and devote herself exclusively to home and family.

One definite contribution of the Department to the war effort was the organization and operation by Professor Hills of a school for aerial observers that used the large eastern room of Orton Hall, then recently vacated by the University library. Models of terrain were spread on the floor and the students observed from perches contrived high under the roof.

The only important changes in 1918-19 were in the faculty. Dr. Ver Wiebe and Mr. Cottingham resigned, and Arthur C. Bevan, from Ohio Wesleyan and Chicago, was appointed Instructor. Enrollment was picking up after the brief depression of the war years.

In 1919-20 there were further changes in the faculty. Professor Hills left to become head of the department at Vassar College, and Mr. Bevan accepted an assistant professorship at the University of Montana. Raymond E. Lamborn (O.S.U., B.A. 1915, M.A. 1917) and Robert F. Webb (Harvard) were appointed instructors. Dr. Carman was now curator of the museum. Courses in geography were added to the departmental curriculum.

Dr. Tucker resigned effective September 1, 1920, to join the faculty at Indiana, and Dr. Roderick Peattie was appointed Assistant Professor to succeed him. Dr. Peattie took over at once the courses in geography. The faculty now consisted of Drs. Bownocker, Carman, Peattie, and Morningstar, Messrs. Lamborn and Webb, and departmental assistants. From this time on, student assistants, both undergraduate and graduate, began to play an increasingly important part in the instructional and other work of the Department, with the graduate assistants eventually gaining ascendancy.

It may interest the reader of this account to know that at the time here reported (1920-21) the salaries of the staff were as follows: Dr. Bownocker, \$3,750; Dr. Carman, \$3,500; Dr. Peattie, \$2,750; Mr. Webb, \$2,000; Miss Morningstar, \$1,800. (Dr. Bownocker was a strong supporter of women in the scheme of things -- until it came to the question of salary.)

The Orton Memorial Library now contained between 3,000 and 4,000 volumes, plus numerous exchanges of the Ohio Geological Survey. This might be the best place for serious tribute to Dr. John A. Bownocker, the outstanding mainstay -- one is tempted to say the creator -- of the Orton Library. As State Geologist Dr. Bownocker saw jealously that every scrap of exchange coming to the Survey was ensconced in the Department library, not the Survey's, and as head of the Department he avidly solicited (and got) funds for the purchase of any valuable items that came on the market. The present writer recalls that every morning Dr. Bownocker could be found at his old-fashioned roll-top desk, poring over the catalogs of booksellers from all over the world. Not a single desirable volume did he miss, and he came out nearly every day with something on which to go to the Dean or the Dean of the Graduate School for funds -- and occasionally he made a big haul when he happened to strike a pocket of funds with which he acquired a large and important set. Building up the library was probably his chief joy in life, threatened only in primacy by his inordinate love of the music of the violin and its relatives in the string quartet or string orchestra. (He took up the study of the violin in his forties and never rose above the mediocre in performance, but he loved it so profoundly that his friends forebore with him when on occasional evenings he would take out his fiddle.)

For 1921-22 Mr. Lamborn was on leave of absence, and Mr. Paris B. Stockdale from Indiana University was appointed Instructor (at a salary of \$2,000). For 1922-23 Raymond Lamborn returned as Instructor, having married Miss Morningstar, and Dr. Bownocker proudly displayed his liberality toward women by appointing Dr. Grace Anne Stewart, a paleontologist from the University of Chicago, as Instructor.

On June 8, 1923, General Edward Orton, Jr. presented a message to the Board of Trustees that was of momentous importance to the department. He began by reviewing the status of the Edward Orton Memorial Library of Geology, which now consisted of 10,703 books, 3,500 or more separates and pamphlets, and several thousand duplicates. The collection had been brought to these proportions by the seizing of opportunities occasioned by the "breaking up and sacrifice of Libraries in Europe on account of the War", which he said "has been greatly to our advantage". The financial support of the library, he pointed out by no means immodestly, came largely from his own purse -- \$500 per annum, compared with \$100 from University funds and the value of Ohio Geological Survey exchanges, set at \$200-250 but entailing no fiscal outlay. He quoted David White, the eminent paleobotanist and Chief Geologist of the U. S. Geological Survey, as having said during a recent visit, "If it goes on as at present, it is destined to become the second Library of Geology in the

United States, being surpassed only by that of the United States Geological Survey itself". (The U.S.G.S. library was then and still is the largest and best in the world.) For some time Dr. Bownocker had been urging that the library needed more space. It was then on the second floor of Orton Hall, with the reading room in 205 and the stacks in the space (now 207 and 208) to the south.

General Orton then recommended that the library be moved to the large room with the balcony, on the east side of Orton Hall, and offered to sustain the expense of remodelling and furnishing the room so as to turn it into a haven worthy of the fine collection of books it was to house, and attractive to all, faculty and students, who would use it. He had employed an architect who reported that the work could be done at a minimum cost of \$10,000. On August 31, 1923, the trustees accepted General Orton's bounteous offer with thanks, and the carpenters and other workmen were active in Orton Hall before the year was out.

In 1924 the trustees authorized a Department of Geography in the College of Commerce and Journalism, and Dr. Roderick Peattie was transferred from Geology to the new department. On April 5, 1924, Charles H. Behre, Jr., Instructor at Lehigh, was appointed Assistant Professor, effective October 1, 1924, to take Dr. Peattie's place, but this appointment was valid for no more than one month; Mr. Behre resigned May 3 to accept an assistant professorship at the University of Cincinnati, and on June 7, 1924, Edmund M. Spieker of the United States Geological Survey was appointed to the position thus vacated. Three new instructors were appointed for 1924-25, Waldo S. Glock from Yale, Macleod E. Hurst from the Geological Survey of Canada, and John A. Culbertson from the University of Chicago. Paris Stockdale was away on leave this year for study at the University of Chicago. This brought the total staff to eight members, a level that was generally maintained until the aftermath of World War II more than twenty years later.

The autumn of 1924 thus saw more changes in the Department than any time thus far, with half of the staff new to the scene -- but this was by no means all. During the year the work on the room for the Orton Memorial Library was completed and this sumptuous facility, the finest in library equipment on the campus, was opened to the University public. This immediately made a big difference in the atmosphere around Orton Hall. Students in general were attracted to the pleasant reading room for study (the University Library was badly overcrowded at this time), and the geology faculty found their bibliographic needs much more agreeably satisfied. Of the former library rooms, 205 was converted into a classroom like 105 below, and the other space was divided up into offices.

All through the fall and winter of 1924-25, the younger members of the staff had been discussing the desirability of a regular seminar or journal club at which faculty members could present results of their investigations or review important new items in the literature, and on

April 1, 1925, this was authorized, the meetings to be held every other week at 4 p.m. Dr. Edward Orton, Jr., was elected honorary member of this seminar.

In October 1925 Mr. Stockdale returned from his leave at Chicago and Mr. Culbertson, who had taken his place, resigned to join the Indianapolis school system. There were three significant curriculum changes in late 1925: Mr. Lamborn proposed a much-needed course in petrology, and Dr. Spieker proposed a course in stratigraphy that later became the principles of sedimentation and stratigraphy. Dr. Spieker also proposed two separate complete courses: physical geology and historical geology. The former second course in geology had been largely a continuation of physical geology, with scant attention to historical. All of these proposals were adopted, but the last was accomplished virtually in rebellion by the younger staff against the conservatism of Dr. Bownocker.

In November, 1926, at two long meetings, the staff considered several problems having to do with field work. First, a trip across the Appalachians to be conducted between the Winter and Spring Quarters, by either Dr. Spieker (stratigraphy and structure) or Dr. Glock (physiography) was authorized, and this venture, despite the awkwardness and even difficulty of logistic arrangement, succeeded for a few years -- but above all it was the forerunner of such trips later taken and managed by the students themselves. More important was the appointment of a committee (Carman, Spieker, Stockdale) to make plans for a summer field training course. This committee reported early in 1927, and the report was accepted. This was the beginning of regular field training in the Department. Dr. Stockdale was put in charge of the program and he selected the site in Tennessee that served for so many years thereafter.

On March 14, 1927, Dr. Bownocker announced that General Orton had made additional contribution for the purchase of books, bringing the total to some \$600 per annum, and this fortunate beneficence has prevailed ever since.

In September of 1927, Hurst and Lamborn resigned and Dr. Radcliffe H. Beckwith and Mr. Harold E. Thomas were engaged as instructors to take their places. Dr. Beckwith had just returned from the American Museum's famed expedition to Central Asia in 1926-27, and Mr. Thomas from studies at the University of Chicago. Both were good teachers, Beckwith colorful, Thomas steady and dependable. As regards staff and personnel, a most important beginning was made this year, when a Miss Alber was assigned to the Department as stenographer, to serve from 1 to 5 p.m., shared with the Department of Physics, where she worked for Dr. Alpheus Smith from 8 a.m. to noon. Before this millennium was attained all staff members did their own secretarial work (typing, Mimeographing, etc.) except Dr. Bownocker, who as State Geologist had the services of the inimitable and irreplaceable Ethel S. Dean.

In late 1928 Dr. Bownocker, who for some time had not been feeling well, was literally propelled by his old friend Dr. Francis Landacre to the Mayo Clinic, where he was found to be suffering from a most malignant form of cancer. Despite a prompt and expertly managed operation, Dr. Bownocker lasted only a few weeks -- he had waited too long for competent medical advice. His death was felt most grievously by all of his colleagues, who, regardless of their attitude towards his academic philosophy and politics, respected and loved him as a gentleman of the old school and, ultimately, a great benefactor of the Department.

The loss of Dr. Bownocker necessitated not only appointment of a new Chairman and a new State Geologist but also a staff member to take over his work. As the latter, Dr. William A. P. Graham, a brilliant sedimentary petrographer from the University of Minnesota, was appointed, but the matter of the chairmanship was allowed to lie unsettled while the Dean and some members of the staff searched for a suitable man; there was rather strong feeling among the younger staff that the new chairman should come from the outside.

Dr. Bownocker's death also wrought change in the Ohio Geological Survey. Wilber Stout, who had been Assistant State Geologist since 1912, was appointed to succeed Dr. Bownocker. For a good many years Stout served part-time on the staff as lecturer, giving a course on the geology of clays that was highly appreciated by the students who took it. Stout was one of the nation's experts on clays. He was trained as a chemist, or really as a chemical engineer, rather than in geology, which subject he learned on his own and in his own way with help from Dr. Bownocker, and despite the fact that his knowledge of it was limited, what he did know he knew well, and students flocked to him as to an oracle. He was a sharp and thorough field observer, and there was no cranny of southeastern Ohio that he did not know, in amazing detail. His presence was of importance to the department beyond his short course on clays, for the clay and coal producers of the state virtually worshipped him, and once when the Governor and the Legislature abolished his office, these gentlemen, with no word of any kind from Stout, descended on the State Capitol and in no time at all the Survey was back in business. Thus, without any positive action on his part, he was the means of keeping the Survey in Orton Hall, where at the time it was a significant asset to the department.

But the problem of the chairmanship was not so easily settled. Candidates satisfactory to all concerned were by no means numerous; in fact, offers were made to just three men, all highly distinguished and all of whom had good reason for not wanting to change their current positions. In the meantime, Dr. J. Ernest Carman had been acting as Chairman, and the members of the staff were well impressed by his performance, and especially his willingness to have things settled democratically and not ex cathedra as had so often been the case under Dr. Bownocker. So, after about a year, a letter was prepared by Dr. Spieker and signed by Drs. Stewart and Graham asking the Dean to appoint Dr. Carman Chairman, and this was done. Thus began a fourth era in the history of the department.

Dr. Beckwith resigned to go to the University of Wyoming, and Dr. Squires was appointed in his place. In October, 1928, three important new courses were introduced. First, a seriously needed treatment by Miss Stewart of micropaleontology, which was then assuming high importance, especially in petroleum geology. Then, for some time it had been recognized that there were many students who enjoyed elementary geology so much that they would like to go on, but not become majors in geology. For these students two courses were set up, affording a choice between geologic life development and the geology of our mineral wealth. Both of these courses prospered for many years.

Mr. Thomas resigned in 1929 to take up the work in ground-water geology at which he has distinguished himself in the U. S. Geological Survey, and his place was taken by Dr. Willard Berry, from the geologic staff (micropaleontology) of the International Petroleum Company in Peru. The curriculum kept growing; two new courses were proposed, geology of the western United States (Spieker) and geology of the eastern United States (Carman). Miss Lois Fessler was appointed as the first fulltime secretary.

In 1930 Dr. Squires resigned to accept a position with the Oregon School of Mines, and was replaced by a Mr. Holmberg. Six new courses were proposed, the largest number at any one time since the foundation of the Department: paleobotany (Berry); microscopic study of opaque ore minerals (Graham); seminar in structural geology (Spieker); seminar in earth tectonics (Spieker); and field geology (Carman, Spieker, Graham, Stockdale). This last was first put into operation the summer of 1931, in Tennessee, with Stockdale in charge.

In 1931, W. S. Glock resigned to take up tree-ring research in Arizona for the Carnegie Institution, and Dr. W. Storrs Cole, a micropaleontologist, came from the Sun Oil Company to take his place. October of 1933 saw the first radio talks at WOSU by geologists, when Dr. Spieker began a long series on the nature of science.

In the Summer of 1934 Dr. Graham fell into diabetic coma one night while at field work in Montana, and died at a spot forty miles from the nearest help. This was a serious blow to the Department, for Dr. Graham was one of the most competent and active of the younger element in the faculty, not only productive in research, but **vigorous** and effective in dealing with students and in the deliberations of the staff. Above all he held out for high standards. His place was taken by another vigorous and effective man, Dr. Bruce Freeman from Canada. The faculty was still short of normal strength by one member, however, so in 1935 Dr. Carl A. Lamey, from Northwestern by way of Mundelein College, was appointed Instructor. Dr. Lamey had attracted attention through his excellent study of the Republic granite, and he started his long career at Ohio State under favorable auspices.

The will of Dr. John A. Bownocker provided that his entire estate go to his widow, but that upon her death it be given to the Ohio State University as a fund in the irreducible debt of the State, the income

to be used "for the work of the Department of Geology". Mrs. Bownocker died in 1935, and on July 1 of that year the trustees accepted the bequest and officially put it into effect. A committee to decide the manner in which the funds were to be used consisted of the Dean of the Graduate School, the Dean of the College of Arts and Sciences, and the Chairman of the Department of Geology. The first allotment of revenue from the endowment enabled the establishment of a Bownocker Fellowship, and the first recipient of this benefaction was Mr. Harry J. Klepser, who has since gone on to become Chairman of the Department of Geology at the University of Tennessee. At about the same time, Drs. Carman and Spieker conceived the plan of a lecture series, to bring every year an eminent geologist for three lectures, two on afternoons of more or less technical nature and a third in the evening of appeal to a general audience. This project was inaugurated the following year, 1936-37, with an outstanding trio of offerings by Alfred C. Lane, and since then the roster of Bownocker lecturers has been virtually a Who's Who of American Geology -- with at least two distinguished Europeans in the list. (The entire roster is given as an appendix to this account.) Income from the fund has also been used for scholarships, purchase of equipment not available from the University budget, travel by staff and students when no Department funds could be had, and other expense in support of the Department's activity. The University administration has ever been generous in approving any and all recommendations of the Department for use of Bownocker money, and through the years Dr. Bownocker's generosity has been of very great importance in the "work of the Department".

In 1936 Willard Berry went to Duke University to begin his long and distinguished term there, and Dr. John T. Rouse, a Princeton man fresh from Hamilton College, joined the staff. Dr. Rouse was a most vigorous and effective teacher. He was here only two years, but while here distinguished himself by a most unusual study of the Anna earthquake in 1937. He resigned, however, in 1938 to go into oil work with the Magnolia Company, and so enjoyed this very different activity that he could not be persuaded later on to rejoin our faculty. The University was fortunate, however, in being able to replace Dr. Rouse with one of the most distinguished men the Department has had for its staff. Dr. John W. Wells, a paleontologist from Cornell, entered vigorously into the work of the department at once and for ten years was one of its leading members.

On March 15, 1940, the museum enjoyed an unusual bonus when Dr. Lincoln La Paz, unorthodox Professor of Mathematics who had invented a metal-probing device the electrical engineers said wouldn't work and had confounded the experts by uncovering more iron meteorites than anyone else had ever done, presented a collection of 27 fine specimens, 218 lbs of meteoritic iron. This has ever since been one of the museum's prize displays.

During the summer of 1940, Dr. Bruce Freeman suffered a fate similar to that of his predecessor, Dr. Graham. He died in his sleep of a heart attack while doing field work in northern Quebec. And, as was the case for Dr. Graham, this was a serious loss. "In the five short

years spent here he impressed an image on the minds of his associates whose vividness will hardly wane with the passage of years; the hearty ring of his voice will not soon cease to resound in our ears, nor will the picture of his powerful and active frame soon fade from our vision." The present writer may perhaps be forgiven for extracting this quotation from a memorial he wrote to the Faculty of the College of Arts and Sciences.

Dr. George R. Gibson was appointed in Dr. Freeman's place. Although primarily a petrologist, Dr. Gibson came to us from petroleum work in Egypt, and his first-hand knowledge of the Near East was of help and interest to several of the staff. But he stayed only one year; the call of petroleum work was too strong, and he left to join the Magnolia Company in 1941.

Another important change came at this time. Dr. Paris B. Stockdale resigned to head the Department of Geology at the University of Tennessee. During the twenty years of his tenure here, Dr. Stockdale left his mark, primarily by the force of his ability at organization and administration. Whatever came under his hand was neatly and unequivocally put in order; he was, in fact, accused more than once in jocular vein of being an "old maid", and several colleagues were known to have averred that the Sigma Xi never had such a secretary-treasurer before or after. But this was not all; his paper on stylolites was a landmark in the study of these fascinating features.

Autumn of 1941 saw two important additions to the faculty. Dr. George W. White was called from the deanship of the Graduate School at the University of New Hampshire to be Professor here, and Dr. J. Osborn Fuller came from Mt. Union to an instructorship -- both men later to figure prominently in the Ohio picture, White as State Geologist, and Fuller as Dean of the College of Arts and Sciences.

In 1942 Dr. Lamey was granted leave to work for the U.S. Geological Survey. David B. Ericson came from geologic work in Turkey and spent a year here, leaving in 1943 to join the Florida Geological Survey. In 1943 Dr. Fuller, who had enjoyed unusual success with beginning students, left to go to West Virginia, and this was a loss presently felt sufficiently to bring on the return of Dr. Fuller under the new administration three years later.

In 1944 Dr. Carman tendered his resignation as Chairman, after 15 years in the office. As a teacher Dr. Carman was severe and demanding, even pedantic at times, but as a man he had the most generous heart imaginable, and many the impecunious student (and faculty member too) who was surreptitiously aided from his purse. In the chairmanship he was conservative when it came to fiscal affairs and other matters of housekeeping, often exasperatingly so, but nobody ever held to higher standards in the judging of candidates for positions on the staff.

Dr. Edmund M. Spieker was appointed to succeed Dr. Carman as the Department's fifth Chairman, but he was unable to take office in October of 1944 because of war work in Alaska undertaken by the U.S. Geological Survey for the Army, from which he did not return until the end of the year. During his absence Dr. Cole took effective charge as acting chairman.

The United States was deeply involved in the war, and not only Drs. Lamey and Spieker were on leave for war work, but also Drs. Stewart and Wells, both of the latter in highly secret activity for the O.S.S. and both highly commended for their achievements. In spring and summer of 1945 Mrs. John W. Wells helped out as Instructor.

Part 2 - 1946-1969

by

Edmund M. Spieker and Robert L. Bates

The year 1946 brought several important changes. First of all, Dr. Richard P. Goldthwait, of Dartmouth-Harvard background, came to the faculty from engineering work with the Air Force. Then Dr. George W. White was appointed State Geologist. This was a matter of great relief to all in the Department, for it was generally feared that on retirement of Mr. Stout the Governor might make some politically engendered appointment that would take the Survey away from the University and threaten the Orton Library (the Survey's exchanges in which were of uncertain legal position). Dr. White was to continue as part-time lecturer on the faculty. Otherwise in the faculty circle, Mrs. Wells was continued, and Mrs. Mildred Fisher Marple and Mr. Donald Norling, both O.S.U. graduates looking toward Doctor's degrees, were appointed instructors. Dr. J. O. Fuller was called back from West Virginia as Associate Professor to be in charge of the elementary courses.

Dr. Spieker spent the summer of 1946 in Utah, continuing his own research, advising Mr. William N. Gilliland on the field work for his Doctor's dissertation, and, most importantly for the concerns of this history, searching for a site suitable for a field station. Dr. Spieker had long been skeptical about college field-training courses, but thought that such a course operated on professional lines, like the work of a geological survey or a petroleum or mining company, might succeed. So with hundreds of square miles of fine geology in central Utah available for both training and research, out of five possible locations he chose the campus of Snow College at Ephraim. Here the Department's field training and much of its research has been centered every summer since.

Another important development in 1946 was a complete revision of the curriculum, under direction of Dr. Lamey for physical geology and Dr. Wells for historical geology and paleontology. This work, carried

on through the whole year, produced the elaborate plan of studies that was the basis for the departmental program until 1969.

Finally for 1946, the year saw the acquisition of the first motor vehicles specifically to be available for the field work of the Department. The need for such transportation had long been considered and discussed, but the administration of the University was adamant in refusing funds for any such frivolity -- it was generally felt that automobiles are mainly for joy-riding or personal transportation, and it took several years to convince some of the higher powers that a car or truck is a piece of equipment, an instrument, to the geologist. For a start, however, the Department had to fall back on the good old reliable Bownocker money, with which an Army jeep crated for shipment (cost \$700) and a fine Ford station wagon (cost \$1,230) were obtained, and thus began the Department's fleet of motor vehicles.

In January of 1947, Dr. Charles H. Summerson, originally from the University of Illinois but then at the Missouri School of Mines, was invited to join the staff, primarily in the first place to help Dr. Spieker launch the new field operation in Utah. From 1943 to 1945 Dr. Summerson had been with the U.S. Geological Survey at work in the West. He gave yeoman service in the burdensome job of getting the field operation under way, with 30 men fresh from the theaters of war and eager to get on with the business of becoming geologists.

In March, 1947, Dr. George E. Moore of Harvard University accepted an instructorship in the Department, and thus began a career at Ohio State that soon led him into important work at the Utah field station when not immersed in his beloved geology of southern New England. For the spring and summer quarters of 1947, Dr. W. A. Rice of Mt. Union College and Dr. Robert Shanklin of Ohio Wesleyan served as temporary Instructors. Mr. Albert R. Glockzin also served as Instructor and began graduate study.

The Autumn of 1947 saw the staff seriously hurt by the loss of Dr. George W. White, who left to head the Department at the University of Illinois. It was readily understandable that Dr. White could hardly fail to grasp this opportunity, and his colleagues here could only be grateful for the six years of his devotion to the Orton Library. Another deplorable loss came with the autumn of 1948, when Dr. John W. Wells went to his alma mater, Cornell, whose call he could not be persuaded to resist. The University was fortunate, however, in obtaining Dr. Aurèle LaRocque from the Geological Survey of Canada and the University of Michigan, so that its work in paleontology was assured of continued and vigorous eminence.

By this time Orton Hall was bursting at the seams, and with no prospect of relief elsewhere on the problem of space, the Chairman was forced to get approval of the conversion of space in the museum balcony from display area to offices, contrived cubby-holes that fell notably short of luxury but at least gave staff and graduate students places where they could work.

The pressure for space in Orton Hall was heightened when word came from Washington that the U.S. Geological Survey was looking for a place to establish a laboratory for research on coal and was apparently favorable to a location in Ohio. Where to put it? After extensive exploration of possibilities it was decided to offer Room 1 on the ground floor, with an adjacent closet. Room 1 was a large classroom that could be partitioned off to suit the needs of the coal laboratory, and the closet could be converted into a photographic darkroom. On February 17, 1949 this plan was approved, and by March 10 Dr. James M. Schopf, paleobotanist in charge of coal research and director of the laboratory, arrived. On November 3, 1949 Dr. Schopf joined the faculty, to give a course in research in coal geology. Thus began one of the more important ancillary activities of the Department. In May of 1950 the Coal Geology Laboratory was opened with suitable ceremonies, and from then on Dr. Schopf, with his students and colleagues, has played a notable part in the general life of the Department.

As the Autumn Quarter, of 1949 began the faculty welcomed two new members, Dr. Howard J. Pincus from Columbia in structural geology and geophysics, and Dr. Charles B. Sclar from Yale in the petrology of crystalline rocks.

1950 may be reckoned an important year for the Department -- and the University -- in a rather unusual way. Dr. Weikko Heiskanen came to Columbus from Finland to do geodetic work in the University's mapping and charting laboratory, an organization supported by the Air Force and directed by Professor George Harding of the Department of Civil Engineering. Dr. Heiskanen was the world's most eminent geodesist. Not a single university in America had a department of geodesy. The thought arose instantly that efforts should by all means be directed toward the organization of an institute of geodesy. Everyone concerned was enthusiastic about this opportunity for the University to pioneer in an important field, but money was not immediately available. It took two years of effort before a valid Institute of Geodesy, Photogrammetry, and Cartography was finally established as a division of the Department of Geology, with Professor Frederick J. Doyle in photogrammetry and Dr. T. J. Kukkamaki in geodesy to aid Dr. Heiskanen. The account of further developments in this field, which turned out to be of signal value to the University, properly belongs in the history of the Department of Geodetic Science. The birth of geodetic work at Ohio State was definitely a first-order event in the history of the Geology Department and one of which all geologists on the campus may well be proud.

The years after the war brought increasing numbers of students to the Department, and what with the boom in petroleum, a swelling corps of majors reached a total of 145 in February of 1950. This meant expansion in all quarters of the Department's work, including the field course, and we might note that by 1950 the fleet of cars available for field work numbered no less than thirteen.

In 1950 Mr. Glockzin resigned to go to Montana, and Oliver D. Blake came from Wooster to take his place. Need for more space became more and more acute, and the staff were now looking seriously toward occupation of Mendenhall Laboratory as the Department of Physics moved out to new quarters. Through the year 1950-51 discussion of the space problem was intensified. In January, 1951 the Department asked for six rooms in Mendenhall, and by the autumn quarter the problem became enmeshed with the larger question: where should geology be placed in the structure of the University? Should it be seated in a School of Mineral Industries? After prolonged discussion the consensus of the staff was negative, but at the same time it was recognized that cooperation with the mineral industries was of paramount importance. Geology should remain in the College of Arts and Sciences and if possible in Orton Hall, went the decision, but either Orton Hall had to be remodeled, with considerable addition toward the rear (plans of this had been dreamed of by senior staff for several years) or Mendenhall would have to be mainly if not fully occupied by geology. Finally, in Autumn of 1951, the University Committee on Space allotted three laboratory rooms, one large office, and a darkroom in Mendenhall, and so began the Department's effective occupation of this large building. The higher administration of the University refused to authorize any extension of Orton Hall into Mirror Lake Hollow, and so the vision of a long hall bordered by offices and illuminated displays (in the present museum space), leading to a larger museum beyond, with the mastodon, its centerpiece, boldly visible from the front lobby, faded.

But in the meantime there were other changes that must be noted here. In the autumn of 1951 the staff was strengthened by the addition of Dr. Robert L. Bates, who came as an Associate Professor from Rutgers University, and Dr. Sidney E. White, who came as Assistant Professor from Syracuse University. In October a course in engineering geology, to be given by John Melvin, was proposed, and shortly thereafter approved.

In March of 1951, a program of radio talks called "Our Changing World" had been launched, consisting of one talk each week by a member of the geology staff. By April 11, 1952, 54 talks had been given; by November it was estimated that the program was reaching some 70,000 listeners, and the officials of WOSU reported excellent response from the radio audience. "Our Changing World" stayed on the air till the spring of 1956, when the Department decided the broadcasts were taking up too much time and energy.

A new Chairman, Dr. C. A. Lamey, took over the responsibilities of the growing Department in 1952. Geology graduate students had increased in numbers to an alltime high of 65. In this same year the staff added its sixteenth member in the person of Dr. Malcolm Weiss from the University of Minnesota.

Another milestone was passed when Dr. Joel Ernest Carman reached the age of 70, at which retirement is mandatory. Dr. Carman's term of 36 years in the Department was the second longest among those of the perennials on the staff, and through those years he worked hard for the

interests of the Department and probably devoted more time, everything considered, to his students than anyone else in its history.

Through 1954 the acquisition of space in Mendenhall Laboratory went ahead at a somewhat accelerated rate, but it was still not adequate for all needs. Room 111 was set aside as a general chemical laboratory, and room 206 for the extensive work on Lake Erie that was being done by Dr. Pincus and his students. Later in the year, four more rooms became available, including an office for Dr. Pincus and one for Drs. White and Weiss. Two staff changes took place in 1954. Dr. Grace Anne Stewart retired after 32 years of service to the Department, and Dr. Walter C. Sweet, conodont specialist from Iowa, joined the staff.

In October, 1955, Drs. Sweet and Weiss conferred with students about possible reorganization of the Geology Club, a student organization that had been going on somewhat irregularly for several years. Their work resulted in effective revival of the club, which has fostered morale among the students ever since, by means of field trips, lectures, and various social occasions.

In December, 1956, word came from the American Geological Institute in Washington about the new programs the National Science Foundation was setting up to strengthen high-school science teachers in the various areas of science. It was agreed that the Department should be interested, but nothing positive was done until 1961, when an application for a Summer Institute went forward and a grant was awarded for an Institute to be held in 1962 at our field station in Utah.

During these years several alumni of the Department, led by Paul Fitzgerald, had been discussing the desirability of an award, to be called the Orton Award, by which to recognize alumni of the Department who have distinguished themselves beyond the ordinary levels of success. The plans of the procedure were laid out by Fitzgerald and agreed upon by his advisors. In February, 1957, the committee to select the first recipient was set up as ordained by Fitzgerald, to consist of two faculty members specified by him, and three alumni, as follows: Professors Carman and Spieker (Chairman), Messrs. George White, Daniel Busch, and Roy Weed. Dr. Clinton Stauffer, who had retired in 1944 after a long career at Minnesota, was the first Orton laureate. He and his notable successors are listed in Appendix 2 to this account.

At about the same time as that of the first Orton Award, the alumni established a flexible sort of organization called the Friends of Orton Hall. Anyone could become a Friend by making a contribution to a fund intended to help needy students or to provide in any way for the advantage of the students. By mid-1958 the fund had passed the \$400 mark; within a decade it exceeded triple this amount. The alumni voted to have the fund administered by a committee of the staff, and Drs. Bates and Moore were appointed to this responsibility. The fund has continued to be of great value to students through the years.

Traditionalists were pleased in 1959 when Orton Hall was officially designated as one of the buildings on the campus that is always to be retained, because of its esthetic value and historic interest.

Dr. Mildred F. Marple (O.S.U., Ph.D. 1950) retired from the staff at the end of the summer in 1959. At the beginning of the 1959-60 academic year, the faculty was augmented by the appointment of Dr. John J. Stephens, a vertebrate paleontologist from the University of Michigan, to teach and also to be curator of the museum; and Mr. George Franklin, one of our own graduates and a doctoral candidate. A few more rooms were obtained in Mendenhall, and a milestone was passed in 1960 when the Department office was moved to 107 Mendenhall Laboratory.

The year 1960-61 began with a new Chairman at the helm, Dr. Howard J. Pincus. Dr. Lamey relinquished administrative work to resume his former position on the teaching staff. In this year the Institute of Polar Studies was established, with Dr. Richard P. Goldthwait as Director. Although this organization has been closely associated with the Department from the very beginning and in a sense might be thought of as part of it, the Institute's distinguished career is properly the subject of a separate history.

A loss to the Department in 1961 was the death of Wilber Stout, who was Assistant State Geologist from 1912 to 1928, when after the death of Dr. Bownocker he became State Geologist and headed the Geological Survey until his retirement in 1946.

The curriculum was still being revised, and in general upgraded. Calculus was now required, and general physics above the elementary level; courses in geomorphology were revised, and one more course was set up in sedimentary petrography; courses in vertebrate paleontology had already been introduced by Dr. Stephens, and Dr. Schopf offered a course in paleobotany; two courses in structural geology were organized to replace the one advanced course.

By the end of 1961 the staff was thinking more actively about training of students to become high-school teachers of earth science. The proposal for a Summer Institute to help teachers already on the job had gone through, and this engendered the idea that the Department should go further and help meet the rising demand for "Earth Science" in the schools by preparing teachers thoroughly before they enter the profession. Conferences with Dr. John Richardson of the College of Education, who quickly became enthusiastic, led to the formulation of a joint curriculum, in both education and geology, and to the appointment in 1963 of Dr. John W. Shrum to manage the program, with tenure in both the College of Arts and Sciences (geology) and the College of Education. Dr. Shrum undertook the work with enthusiasm, vigor, and competence, and it was soon an important element in the work of the Department. Meantime, in 1962 the first NSF Summer Institute was held at our Utah field station, with 24 teachers from all over the country. The teachers were introduced to

geology in the field, and (at the insistence of Dr. John Richardson) given the course in the nature and development of science that Dr. Spieker had been offering since the early 1930's. Dr. Sidney E. White was associate director of the Institute; he took over most of the work in geology, and was assisted by Dr. H. K. Lautenschlager, who attained his doctorate here in 1952 and had worked in the region of the field station for several years.

There were several important events in 1962. July 1 saw the retirement of Dr. Lamey, who became free to travel and to work on a book on metallic and industrial mineral deposits; the addition to the staff of Dr. Colin Bull, an English geophysicist from Birmingham and Cambridge by way of New Zealand; and the transfer of Dr. Stephens to the office of the College of Arts and Sciences as assistant dean. Dr. Stephens's place as museum curator was taken on a temporary basis by T. J. M. Schopf, a doctoral candidate in geology.

The Orton Memorial Library purchased the reprint collection of R. M. Field, late of Princeton University, together with much of his geological correspondence. The library also was pleased to accept a gift of geological publications from Dr. Robert C. Stephenson. In 1962 the Department received an award from the NSF of \$20,000, plus some \$30,000 from the University, for the purchase of equipment for undergraduate instruction. Drs. Weiss and Sweet were awarded an NSF grant for the systematic restudy of the Cincinnati rocks in the type region -- a program that was to provide work for several graduate students and produce a series of significant publications.

Dr. Gunter Faure (Ph.D., M.I.T.) joined the staff in the fall of 1962 and began the work in geochemistry that he has effectively prosecuted ever since. By 1965 his domain, which was thriving with grants, students, and publications, came to be designated the "Laboratory of Isotope Geology and Geochemistry." In December 1962, the Ohio Geological Survey moved from its historic quarters in Orton Hall to more modern accommodations in Grandview. Even though the space thus released eventually went to the Department, loss of the Survey was a great setback to our general welfare.

In the Spring of 1963 Dr. Daniel A. Busch, one of our distinguished alumni in the field of petroleum geology, accepted our invitation to be visiting professor for one quarter while Dr. Bates was off duty. In September, Dr. Robert C. Stephenson was called to Columbus as Director of the University's Research Foundation. Dr. Stephenson, a Johns Hopkins Ph.D. of 1943, came from directorship of the American Geological Institute. He was appointed a nominal Professor in the Department, and, though without teaching duties, shortly took considerable interest in Department affairs.

Dr. Jay H. Lehr (Ph.D., University of Arizona) joined the staff in the autumn of 1963, to develop a program of teaching and research in geohydrology. The next year we were joined, or rather rejoined, by Dr. Charles H. Shultz (O.S.U., Ph.D., 1962), who came from a tour of duty

with the Humble Oil and Refining Company to strengthen our offerings in igneous and metamorphic petrology. Arthur Mirsky (O.S.U., Ph.D. 1960), assistant director of the Institute of Polar Studies, took over the instruction of the evening section of introductory geology.

1965 saw a new Chairman in the person of Dr. Goldthwait, after Dr. Pincus had requested relief from administrative duties. Concurrently Miss Dorothy Amrine, who had been Department secretary for more than a decade, resigned; her place was taken by Mrs. Lauraine Brush. Dr. Bull succeeded Dr. Goldthwait as Director of the Institute of Polar Studies. Early in the year, we were host to the first Forum on Geology of Industrial Minerals, which was successfully launched. Dr. Maurits Lindström, then of Lund University in Sweden, was a Visiting Professor in the Department during the Winter quarter.

On April 30, 1965, over 90 persons gathered to honor Dr. and Mrs. Spieker on the occasion of Dr. Spieker's impending retirement, which was effective September 30. Dr. Spieker was presented with a bound volume of letters of greeting from colleagues, students, and friends, and with a painting sent by Dr. Grace Anne Stewart who could not attend. Siegfried Muessig (O.S.U., Ph.D. 1951) spoke on behalf of Dr. Spieker's students, past and present. Although Dr. Spieker retired formally as Research Professor, as required by law, the Department was able to retain his services as Director of the NSF Summer Institute for high-school science teachers held annually at the Utah field station.

During the academic year 1965-66, three people were on leaves of absence. Dr. Summerson was in Washington on rotating duty with the NSF. Dr. Shrum was in Boulder, Colorado, as Director of Teacher Preparation, Earth Science Curriculum Project. Dr. White was also in Boulder, as Visiting Professor at the University of Colorado. (This tour of duty was pleasantly interrupted in April 1966, when Dr. White returned to the campus to receive one of five O.S.U. Alumni Awards for Distinguished Teaching.) During this year, Dr. F. H. T. Rhodes, of the University College at Swansea, Wales, was a Visiting Professor in the Department and NSF Senior Foreign Scientist. He taught micropaleontology, gave a special course on the geology of Britain, and delivered an unusually fine trio of Bownocker lectures.

Throughout 1965 and 1966, Orton Hall and Mendenhall Laboratory were under more or less constant attack by drill, hammer, trowel, and paintbrush. After many months the dust and clamor finally died away, and we found ourselves with renovated classrooms, an air-conditioned Department office and main lecture room, much-improved lighting, new floors, and numerous other amenities. Indeed our quarters actually came to take on some of the aspects of modernity.

Starting early in the 1960's, the University had begun operating instructional centers off the main campus. These regional two-year centers were situated at Lakewood, Lima, Mansfield, Marion, and Newark. Geology was taught at each one from the start. All courses were at

first given in makeshift facilities, chiefly high schools, at evening hours; all geology courses except those at Lakewood were staffed by professors or graduate students who commuted twice a week from Columbus. Much progress has since been made. The Lakewood campus, where Thomas L. Lewis (O.S.U., Ph.D. 1963) had been stationed, is now Cleveland State University, and Dr. Lewis is head of its Department of Geology. New buildings were completed at Lima and Mansfield, and in the autumn of 1966 a permanent staff member was hired for each place and regular daytime classes in elementary geology commenced. At Lima was Dr. David J. Hagar from the University of Massachusetts, and at Mansfield Dr. David A. Nickey from Penn State. Starting in the autumn of 1969, geology at the Marion campus is to be taught by Dr. R. Gary Wallace (O.S.U., Ph.D. 1967). Our courses at Newark were handled for several years by James F. Gregory (O.S.U., M.S. 1956), a science teacher in the Newark school system; since 1967 they have been given by James E. Bradley (O.S.U., M.S. 1964), a doctoral candidate in mineralogy. The Department is proud of the caliber of men it has obtained to fill these positions, and considers that they are members of the Columbus "family."

Changes in personnel on the main campus in 1966 included the addition of Dr. Charles E. Corbato, who joined us from the University of California at Los Angeles, as Associate Professor in geophysics; and Dr. James W. Collinson, who had just completed graduate work at Stanford, as Assistant Professor in paleontology-stratigraphy. Mr. Richard J. Anderson of Battelle Memorial Institute was appointed Adjunct Professor, to give a course in oceanography and marine geology. Mr. John Burke was hired as curator of the museum, to succeed T. J. M. Schopf who had left after receiving his Ph.D. (Not until this year, it seems, was the museum officially designated the Orton Museum.)

The year 1966 saw the death of three persons who had been prominent in the Department over the years. On January 12 Dr. Carman died, an event that saddened all Ohio State geologists. He had faithfully served the University, as described earlier in this chronicle, from 1916 to his retirement in 1952. On March 10, Miss Ethel S. Dean passed away. Miss Dean, a rare and delightful person, was the secretary of the Ohio Geological Survey for some 40 years, 1914-1954; she served under five state geologists, Bownocker, Sout, White, Melvin, and Bernhagen. Then on August 4 occurred the death of another charming and well-beloved woman, Mildred Fisher Marple. She made a strong contribution as geologist, teacher, and museum curator while living a happy married life and raising a family. She taught in the Department from 1945 to 1959.

Dr. Carman's collection of books and papers was acquired by the Orton Memorial Library. After his death Dr. Carman was found to have left an appreciable sum to the University, the income from which was to be used for a fellowship in the Department of Geology.

1967 might reasonably be designated the Year of the Big Turnover. Dr. Pincus left to take charge of a research group at the Twin Cities Mining Research Center of the U.S. Bureau of Mines. Dr. Weiss accepted the chairmanship of the Division of Geology at Northern Illinois University. Dr. Shrum went to the University of Georgia, to become Chairman of the Department of Science Education. Dr. Lehr moved downtown to assume duties as Executive Director of the National Water Well Association. Dr. Mirsky joined Indiana University, to start a geology program in their Indianapolis division. Mr. Burke moved to the Cleveland Museum of Natural History. Miss Florence Hendee, friendly and efficient librarian of Orton Library, retired.

Notwithstanding these severe losses, the Department was able to maintain its ranks. Additions to the staff in this same year included Dr. Wayne A. Pettyjohn, who joined us as Associate Professor after several years' work in geohydrology with the U.S. Geological Survey; Dr. Victor J. Mayer, who accepted an appointment in earth-science education supported jointly by the Department of Geology and the College of Education; Dr. A. Gordon Everett from Texas in sedimentary petrology; and Dr. Robert J. Fleck from California (Berkeley) in geochemistry. Dr. David H. Elliot, a recent addition to the staff of the Institute of Polar Studies, took over much of the evening course work formerly handled by Dr. Mirsky. In January of 1968, curatorship of Orton Museum passed to Dr. Stig Bergström, a new member of the staff from Lund University, Sweden. Orton Library was to remain without a fulltime librarian until the appointment of Mrs. Regina Brown, on July 1, 1969.

In accordance with a directive from the University, the Department staff evolved a "Six-Year Plan," in which it indicated directions of future specialization and expansion. The plan, subject to annual reconsideration, envisioned the development of areas of strength in biostratigraphy, geochemistry, Quaternary geology, geohydrology, and eventually geophysics and (in cooperation with Mineralogy) igneous and metamorphic petrology.

An event of 1967 that was to have long-range significance was an evaluation of the Department by three distinguished outside geologists. Recommendations made by these gentlemen to the Dean, and through him to the Department, resulted in distinct improvements in departmental organization and morale. Among these was a change in committee structure, an Executive Committee handling many routine matters formerly considered by the whole staff; the establishment of a Faculty Seminar, at which each staff member reports periodically on his current research; and provision of a conference room, with tables and chairs, magazines, and a coffee center, where staff and students may gather for informal discussions. (This room, 106 Mendenhall Laboratory, has been designated the Carman Room, and is so marked by a handsome plaque presented to the Department by the Ohio Geological Society.) Another result of the "visitation" was a considerably revamped curriculum, more nearly in line with modern concepts of the geological sciences.

After Dr. Spieker's retirement, which followed the 1965 field season, the management of the Field Station at Ephraim, Utah, passed to Dr. Weiss, who handled it capably in 1966 and 1967. On Dr. Weiss's move to Northern Illinois, Dr. Collinson took charge, but close liaison between these two men continued, and in fact in 1968 and again in 1969 the Field Station was a joint venture of O.S.U. and N.I.U. In 1968 for the first time, introductory physical and historical geology were offered at Ephraim, with Dr. Everett as instructor. This offering was repeated in 1969, under the instructorship of Dr. Fred Pashley (O.S.U., M.S. 1956; Ph.D., University of Arizona, 1966). Thus the Field Station became the base of three separate programs: the regular course in field methods for undergraduate majors in geology; Dr. Spieker's NSF-sponsored Summer Institute for earth-science teachers; and introductory physical and historical geology.

In the autumn of 1967 the Department had a Visiting Professor in the person of Dr. F. C. Loughnan of the University of New South Wales, Sydney, Australia. Dr. Loughnan taught a course in historical geology and pursued research on Pennsylvanian-Permian sedimentology.

As of December 31, 1967, the College of Arts and Sciences ceased to exist. In its place there arose six new colleges, in one of which, namely Mathematics and Physical Science, the Department found its new home. Along with geology in this college went astronomy, chemistry, geodetic science, mathematics, and physics. Concurrent with this reorganization came the resignation of Dean J. O. Fuller, former member of the Department of Geology, who left Ohio State to assume the presidency of Fairleigh Dickinson University.

The Department was host to a distinguished Visiting Professor in the spring of 1968, the internationally known geophysicist J. Tuzo Wilson. His course in "World Geology" was well received and produced considerable discussion.

Miss Karen Erickson began work as Department draftswoman in June. Mrs. Brush resigned as office manager and was succeeded by Mrs. Jayn Sherman.

On May 1, 1966, Drs. Sweet and Bates were awarded an NSF grant for the development of a "Programmed Geology Laboratory." Further aided by a partial matching grant from the University, over the next two years they worked out a series of short films which were produced by the University's Photography Department; assembled slides, mineral and rock specimens, and maps; arranged for the erection of 24 individual carrels in a laboratory in Mendenhall; and wrote a laboratory manual designed to be used independently by the student in his own carrel, working at his own speed. The new arrangement was "phased in" in 1968-69; by the spring of 1969, all the students in introductory geology, some 1,000 of them, were going through the new laboratory, and the conventional laboratory had been discontinued. A concurrent study of student attitudes and accomplishments, by a Ph.D. candidate in Science Education, indicated

certain areas where improvement was needed but in general justified the change. The Department's ventures in this direction have been watched with great interest by other Departments with large enrollments in introductory geology.

On May 15-17, we were hosts to the North-Central Section of the G.S.A. and the East-Central Section of the N.A.G.T.; about 400 geologists were on hand, and as many as four sessions were running concurrently. Staff, graduate students, and undergraduate majors cooperated in good spirit in this venture and it reflected credit on the Department.

Effective August 1, 1969, guidance of the Department passes to a new chairman (the ninth in its history), Dr. Colin Bull. Dr. Goldthwait returns to teaching, and especially to the research which he has had to postpone during his chairmanship.

This is a good point at which to terminate this history. Additional chapters as they unfold may be read in future Alumni Newsletters and departmental records. From the sound foundations, literal as well as figurative, that were laid down by the first Edward Orton, there has evolved a Department of some 20 staff members, 40 graduate students, 80 undergraduate majors, a loyal body of alumni, extensive physical facilities, a large budget, close cooperation with related departments and agencies, a good reputation on the University and national scene, and good internal esprit. If the University's first President and the Department's first Professor could return to the campus community, we hope he would be proud of what he saw.

Appendix 1.
BOWNOCKER LECTURERS

1937 Alfred C. Lane
 1938 Walter H. Bucher
 1939 Reginald A. Daly
 1940 Charles K. Leith
 1941 Arthur L. Day
 1942 George F. Kay
 1943 O. D. von Engeln
 1944 No lecture
 1945 Max W. Ball
 1946 George Gaylord Simpson
 1947 Chester R. Longwell
 1948 Hugh D. Miser
 1949 No lecture
 1950 Harold C. Urey
 1951 James Gilluly
 1952 Sidney Paige
 1953 M. M. Leighton
 1954 F. A. Vening-Meinesz
 1955 No lecture
 1956 J Harlen Bretz
 1957 J. L. Gillson
 1958 F. J. Pettijohn
 1959 Norman D. Newell
 1960 Philip B. King
 1961 Alfred S. Romer
 1962 Charles H. Behre, Jr.
 1963 John W. Wells
 1964 J. Tuzo Wilson
 1965 K. O. Emery
 1966 F. H. T. Rhodes
 1967 Richard Foster Flint
 1968 Cesare Emiliani

Appendix 2.
RECIPIENTS OF THE ORTON AWARD

1957 Clinton R. Stauffer
 1958 David Griggs
 1959 William C. Morse
 David Dale Condit (posthumous)
 1960 Daniel A. Busch
 1961 George W. White
 1964 Paul R. Shaffer
 1967 Kenneth L. Cochran

Appendix 3.
DEPARTMENT CHAIRMEN

1873-1899 Edward Orton, Sr.
 1899-1916 Charles S. Prosser
 1916-1928 John A. Bownocker
 1929-1944 J. Ernest Carman
 1945-1952 Edmund M. Spieker
 1952-1960 Carl A. Lamey
 1960-1965 Howard J. Pincus
 1965-1969 Richard P. Goldthwait
 1969- Colin Bull